

readily putrefies; and in three or four days after the birth of the calf, is replaced by the ordinary lacteal secretion.

The colostrum of the cow, ass, and goat, has been submitted to examination very lately by MM. Chevalier and Henry. They state the property possessed by this secretion of undergoing coagulation by heat, although they have not mentioned albumen among its ingredients. It is probable that it was confounded with the mucous matter, stated by these gentlemen to be present in the fluid. The following is the result of their analysis of the colostrum of the cow:—

Casein	15.07
Mucous matter	2.00
Saccholaetin, or sugar of milk	?
Butter	2.60
Water	80.33
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	100.00

On taking a retrospective glance at the above remarks on the composition of cow's milk, which I have taken as a standard or type of this class of secretions, we can not help being struck with the peculiar manner in which the different component parts appear to be arranged, for the more ready nourishment of the new-born animal. Milk may be physiologically regarded as made up of three classes of ingredients, the first containing those which resemble vegetable secretions in the absence of nitrogen; the second including those which contain abundance of nitrogen, and consequently afford a proper pabulum for the growth of the young animal; the third class containing those ingredients which in the present state of chemical physiology we have no safe grounds for supposing are *digested*, or their elements re-arranged by vital chemistry, and hence differ from the first two classes in being rather *appropriated* by the vital influence of the infant animal, than assimilated to form such combinations.

A. *Ingredients of milk in which nitrogen is absent.* Sugar of milk, fatty matters.

B. *Ingredients of milk in which nitrogen is present.* Caseous matter.

C. *Inorganic, or saline ingredients.* Salts of potass, soda, lime, and iron.

The latter class contains those earthy salts which constitute the chief ingredients in osseous structures; and all being dissolved in, or diffused through, abundance of water, become fitted to pass or drain through the minutest vascular tissues.—*Lond. Med. Gaz.* April, 1840, from *Sir A. Cooper's Work on the Mammary*.

56. *Observations on the existence of certain elements of the Milk in the urine during utero-gestation; and on the application of this fact to the diagnosis of Pregnancy.*—The No. of *Guy's Hospital Reports*, for April last, contains an account of some interesting investigations by Dr. GOLDING BIRD relative to the *Kiestein*, a newly discovered constituent of the renal secretion, existing in the urine of the human female, during utero-gestation. (See No. of this Journal, for Feb. 1840, p. 483.)

Dr. Bird first submitted to examination the urine of a married woman in the sixth month of pregnancy, and after four days exposure the urine became covered with the peculiar fat-like serum. To ascertain next whether such appearances were constant in the urine in every case of utero-gestation, Dr. B. obtained specimens from about thirty women, under his care in the Finsbury Dispensary, in the third to the last month of pregnancy, and in every case, with but three exceptions, copious fat-like pellicles were observed after two or three days exposure.

Whilst collecting these specimens of the urine of pregnant women, Dr. B. directed several young women who presented themselves to be treated for amenorrhœa at the Dispensary, to bring specimens of their urine, which were exposed simultaneous with those furnished by the pregnant women; and in two instances only, was any evidence of the presence of the peculiar matter mani-

fested. In one Dr. B. strongly suspected pregnancy from the appearance of the areola around the nipple, but she was so much annoyed at being questioned on this point, that she left the Dispensary and he could not verify his suspicions. The second case was that of an unmarried servant, who came under Dr. B's care Nov. 7th, 1839, suffering from cough, apparently depending upon deranged digestive functions, and relaxed uvula: she had not menstruated since last May, and attributed the disappearance of the catamenia to exposure to cold. "She had morning sickness, and the veins of her lower extremities were varicose. On examining the abdomen, no evident enlargement of the uterus could be observed, in consequence of the parietes being loaded with fat; and on looking at the breasts, the nipples were found surrounded by a large purplish-brown areola. On being charged with pregnancy, she obstinately denied it: but admitted having become the mother of an illegitimate child eleven years previously. She declared that she had preserved absolute chastity since that period, and wept bitterly at my (as she termed them) unjust suspicions. I procured a specimen of her urine, and exposed it in a lightly-covered glass cylinder: in two days, a dense pellicle of fat-like matter formed on its surface: this increased in thickness during three days, and then evolved so powerful an odour of putrefying cheese, that I was obliged to throw it away. On telling my patient that I was convinced of her pregnancy, and declining to prescribe any remedy to restore menstruation, she left the Dispensary; and I lost sight of her until January 15th, when she again saw me, and requested my interest to procure her admission into a Lying-in Institution; she was evidently then within a month of her confinement."*

Dr. B's investigations into the nature of the Kiestein led him to infer that the greasy aspect of the pellicle, arises not from the presence of fat, but from numerous crystals of triple phosphate, which, from their brilliancy, produce this glistening appearance. With regard to the nature of the animal matter mixed with these crystals it is difficult, Dr. B. observes, in the present state of physiological chemistry, to give a positive opinion. "It is not," says Dr. B., "mere albumen or casein, although much closer allied to the latter than to any other product of organisation I am acquainted with, especially when we connect with its chemical character, the powerful cheese-like odour so frequently evolved, during its development in the urine, in the form of a pellicle."

Dr. B. thinks that there is sufficient evidence of the presence of certain ingredients of the milk, as caseous matter, and abundance of earthy phosphates, in the urine of pregnant women; he therefore suggests as a probable explanation, that during utero-gestation "certain ingredients of the milk are eliminated from the blood by the mammary glands, and, as is very well known, often accumulated in the breasts, in sufficient abundance, to escape from the nipple on pressing it between the fingers. This imperfectly-formed secretion, not having a ready exit by the mammae, is taken up into the circulating mass, is separated by the kidneys, and eventually, escapes from the body in the urine."

Dr. B. notices a curious circumstance somewhat in corroboration of these views, in the exceptions to the presence of the ingredients of milk in the urine, already alluded to. One of these cases which Dr. B. relates is as follows.

"Jane Francis, aged 30, in the eighth month of pregnancy, came under my care, among the out-patients of Guy's Hospital, in the beginning of October, 1839, for hæmorrhoids. A portion of the urine voided early in the morning, after two day's repose, became covered with the ordinary pellicle. I desired her to bring me another specimen in a few weeks, wishing to examine it near the end of utero-gestation. On October 25th, she again presented herself, labouring under a severe cold: her skin was hot and dry, and her urine scanty, high-coloured, and contained a copious deposit of lithate of ammonia. By repose, during several days, not the slightest appearance of the peculiar pellicle could be detected. On the functions of the skin becoming restored by the administration of antimonial diaphoretics, the lithate of ammonia disappeared, and

* This woman has since been delivered of a male child.

the ordinary phenomena characteristic of pregnancy, appeared in the urine; so that it appeared, that on the onset of slight inflammatory fever accompanying the cold, the ordinary secretions became arrested, and with these the caseous pellicle vanished: immediately, however, that diaphoresis was produced, and the kidneys had ceased to perform a compensating function for the skin by carrying off nitrogen from the system in the form of lithate of ammonia, they commenced eliminating the imperfectly-formed elements of milk from the blood in the ordinary manner."

Dr. B. has never seen in the renal secretion of nurses, the pellicles which he assumes to be characteristic of the presence of certain elements of milk in the urine, and this he thinks justifies the idea, that, whilst suckling, the milk being got rid of almost as quickly as it is secreted, none of its elements find their way into the urine; but as soon as the milk ceases to be removed in this way, and indications of it are to be met with in the urine, providing pregnancy exists.

Dr. B. was consulted by a woman in the third month of utero-gestation, about her son 16 months old, whom she was suckling. This child was evidently dying. Dr. B. examined the mother's urine collected before the death of her child the day after, and again a week after this event. The first underwent no particular change; the second after two days repose had a thin caseous pellicle on its surface, and the third, in three days became covered with a complete creamy layer, evolving a strong cheese-like odour.

The following case is also related by Dr. B. "Emma Cox, aged 24, suckling her first child, five months' old, admitted under my care at the Finsbury Dispensary, in December 1839, complaining of symptoms generally referrible to *asthenia lactantium*. She was a tall, thin, delicate-looking woman, and had lost a mother and some collateral relations from consumption: she had little or no cough: on examining her chest, I detected tubercular deposit at the apices of both lungs, with evidence of commencing softening on the left side: her urine was pale, and free from any appearance of caseous pellicle. I desired her to wean her infant; but this she did not do until January 27th, 1840. When she sent her child away, her breasts became painful and hard. She was compelled to have them drawn; and in a week they became flaccid, and the secretion of milk stopped. On January 30th, the breasts being still turgid, and three days after the cessation of suckling, some of her urine was collected, and exposed in a glass cylinder: in the course of four days, a cream-like pellicle, evolving a cheese-like odour, was observed: on collecting some of it on a slip of glass, and examining it under the microscope, it was found to resemble the usual pellicle which forms, by repose, on the urine of pregnant women, in every respect, except in the extreme paucity of the crystals of triple phosphate; the entire portion of the pellicle examined, being nearly entirely composed of the animal matter, insoluble in acetic acid."

Dr. B. has several times examined the urine of women shortly after their confinement and hitherto has not succeeded in detecting any indications of the presence of milk in that secretion.

In conclusion Dr. B. offers the following deductions as sufficiently supported by his observations.

"1. That certain organic matters, closely resembling, if not identical with, caseous matter mixed with abundance of the earthy phosphates in a crystallized state, are eliminated from the blood during pregnancy; and, if not otherwise removed, are taken up, and finally thrown out of the system, by the kidneys.

"2. That certain accidental circumstances, especially connected with those morbid actions in which the kidney is called upon to perform a compensating function for the skin, as indicated by the abundance of azotized matter in the form of amorphous lithate of ammonia in the urine, interfere temporarily with the development of caseous matter, as they do in checking the cutaneous and other secretions.

"3. That, taken in connection with other symptoms, as the formation of a dark areola around the nipple, and cessation of menstruation, or abdominal enlargement, the formation of a caseous pellicle in the urine affords a very valuable corroborative indication of the existence of pregnancy."